

DOST JUNIOR LEVEL SCIENCE SCHOLARSHIP (JLSS) PRACTICE EXAM (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE**

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. What is the term for the rate of change of velocity with respect to time?**
 - A. Speed
 - B. Acceleration
 - C. Velocity
 - D. Displacement
- 2. Which statement about smart mobs best describes their autonomy?**
 - A. Each Node Is Autonomous But Capable Of Micro-Coordinating Its Movements With Other Nodes For A Specific End
 - B. All Nodes Immediately Follow A Central Command
 - C. Nodes Act Without Any Coordination
 - D. The Movement Is Directed By A Single Leader
- 3. If gravity became stronger, would lifting the same box to the same height require more work?**
 - A. Yes
 - B. No
 - C. Depends on other factors
 - D. Not enough information
- 4. Which of the following is not an SI base unit?**
 - A. Meter
 - B. Second
 - C. Ampere
 - D. Volt
- 5. Which statement accurately describes the difference between spermatogenesis and oogenesis?**
 - A. There are prolonged interruptions in oogenesis unlike in spermatogenesis which occurs in constant manner.
 - B. Sperm cells take longer time to develop than eggs.
 - C. Ovum is produced continuously whereas sperm production occurs in bursts.
 - D. Spermatogenesis starts only in adolescence.

6. The pH of a solution with $[H^+] = 1.0 \times 10^{-5} \text{ M}$ is:
- A. pH 5
 - B. pH 7
 - C. pH 3
 - D. pH 9
7. At what angle from the ground should a projectile be launched to achieve maximum range?
- A. 0°
 - B. 45°
 - C. 60°
 - D. 90°
8. In the sentence 'My baby sister always falls asleep whenever I sings to her favorite song,' which part shows an error?
- A. Asleep Whenever
 - B. My Baby Sister Always Falls
 - C. I Sings To
 - D. Her Favorite Song
9. Which gas makes up about 21% of Earth's atmosphere?
- A. Nitrogen
 - B. Oxygen
 - C. Argon
 - D. Carbon Dioxide
10. In a velocity versus time graph, how can a horizontal graph be interpreted?
- A. maximum displacement
 - B. constant velocity
 - C. increasing speed
 - D. changing acceleration

Answers

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1. B
2. A
3. A
4. D
5. A
6. A
7. B
8. C
9. B
10. B

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Explanations

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1. What is the term for the rate of change of velocity with respect to time?

- A. Speed
- B. Acceleration**
- C. Velocity
- D. Displacement

Acceleration is the rate at which velocity changes with time. Velocity tells how fast something is moving and in what direction, so any change in speed, a change in direction, or a combination of both is acceleration. Mathematically, it's $a = dv/dt$, the change in velocity divided by the time over which that change occurs, with units of meters per second squared. For example, if a car speeds from 0 to 20 m/s in 4 seconds, its acceleration is $20/4 = 5 \text{ m/s}^2$. Even if the speed stays the same but the direction changes, such as a car turning in a circle at constant speed, the velocity is changing and there is acceleration toward the center of the circle. Speed is how fast something is moving, without direction. Velocity is speed with direction. Displacement is how far the object has moved from its starting point, regardless of the path taken. These are related ideas, but the term that describes how velocity changes over time is acceleration.

2. Which statement about smart mobs best describes their autonomy?

- A. Each Node Is Autonomous But Capable Of Micro-Coordinating Its Movements With Other Nodes For A Specific End**
- B. All Nodes Immediately Follow A Central Command
- C. Nodes Act Without Any Coordination
- D. The Movement Is Directed By A Single Leader

Smart mobs rely on decentralized autonomy. Each node acts independently based on simple local rules, yet it can coordinate with nearby nodes to move toward a shared goal. This micro-coordination—small, local interactions that align with the overall objective—produces organized, emergent behavior without a central controller. Descriptions that imply a single leader or no coordination don't fit how smart mobs operate, nor would a strict central command produce the flexible, scalable coordination observed in these systems. So the best description is that each node is autonomous but capable of micro-coordinating its movements with other nodes for a specific end.

3. If gravity became stronger, would lifting the same box to the same height require more work?

- A. Yes**
- B. No
- C. Depends on other factors
- D. Not enough information

Lifting a box to a fixed height requires work equal to the gravitational force you must overcome times the distance moved: $W = m g h$. For a given box (mass m) and height (h), if gravity (g) becomes stronger, the force you need to apply increases, so the work increases in direct proportion to g . Therefore more work is required to lift the box to the same height when gravity is stronger. This matches the choice that says yes. The other options don't fit because, with mass and height fixed, changing gravity changes the required work; there's no need to invoke other factors or claim insufficient information in this ideal scenario.

4. Which of the following is not an SI base unit?

- A. Meter
- B. Second
- C. Ampere
- D. Volt**

SI base units are the fundamental building blocks from which all other units are derived. They include meter for length, kilogram for mass, second for time, ampere for electric current, kelvin for temperature, mole for amount of substance, and candela for luminous intensity. A volt is a derived unit used to measure electric potential difference. It can be written in terms of base units as $1 \text{ volt} = 1 \text{ joule per coulomb} = (\text{kg} \cdot \text{m}^2 \cdot \text{s}^{-2}) / (\text{A} \cdot \text{s}) = \text{kg} \cdot \text{m}^2 \cdot \text{s}^{-3} \cdot \text{A}^{-1}$. Because it is formed from multiple base units, it is not a base unit.

5. Which statement accurately describes the difference between spermatogenesis and oogenesis?

- A. There are prolonged interruptions in oogenesis unlike in spermatogenesis which occurs in constant manner.**
- B. Sperm cells take longer time to develop than eggs.
- C. Ovum is produced continuously whereas sperm production occurs in bursts.
- D. Spermatogenesis starts only in adolescence.

Pattern of gamete production: oogenesis has long interruptions, while spermatogenesis is essentially continuous. In females, oocytes begin development before birth and enter meiosis but are paused in prophase I for years, only resuming periodically during the reproductive years and then arresting again at metaphase II until fertilization. This creates long gaps between the formation of usable eggs. In contrast, males produce sperm after puberty in a steady, ongoing process with spermatogonia continually renewing and advancing through meiosis and maturation, yielding a constant supply of sperm over a person's reproductive life. That contrast—long pauses in the female process versus continual production in the male process—best matches the statement. The other ideas don't align with this pattern: the notion that eggs are produced continuously, or that sperm development happens in bursts, or that spermatogenesis starts only in adolescence, doesn't reflect the continuous nature of male production or the paused, cyclical nature of female development.

6. The pH of a solution with $[\text{H}^+] = 1.0 \times 10^{-5} \text{ M}$ is:

- A. pH 5**
- B. pH 7
- C. pH 3
- D. pH 9

pH is defined as the negative base-10 logarithm of the hydrogen ion concentration: $\text{pH} = -\log_{10}[\text{H}^+]$. With $[\text{H}^+] = 1.0 \times 10^{-5} \text{ M}$, $\log_{10}(1.0 \times 10^{-5}) = -5$, so $\text{pH} = -(-5) = 5$. A pH of 5 indicates acidity (less than 7). For context, neutral is pH 7, and higher pH values are basic. The other pH values correspond to different hydrogen ion concentrations: pH 3 is more acidic (higher $[\text{H}^+]$), while pH 9 is basic (much lower $[\text{H}^+]$). So the solution's pH is 5.

7. At what angle from the ground should a projectile be launched to achieve maximum range?

- A. 0°
- B. 45°**
- C. 60°
- D. 90°

To maximize how far a projectile travels horizontally when launched from level ground with a fixed speed and no air resistance, the range depends on the angle. The range can be written as $R = \frac{v^2 \sin(2\theta)}{g}$, where v is the launch speed and g is gravity. With the speed fixed, maximizing the range means maximizing $\sin(2\theta)$. Since $\sin$ reaches its maximum value at 1 when $2\theta = 90^\circ$, the optimal angle is $\theta = 45^\circ$. Intuitively, 45° provides a good balance between vertical lift and forward speed, giving enough time aloft while preserving forward motion. If the ground heights differ or air drag is present, the best angle shifts away from 45° .

8. In the sentence 'My baby sister always falls asleep whenever I sings to her favorite song,' which part shows an error?

- A. Asleep Whenever
- B. My Baby Sister Always Falls
- C. I Sings To**
- D. Her Favorite Song

The sentence shows a subject-verb agreement issue in present simple. When the subject is *I*, the verb stays in its base form, so the verb should be *sing*, not *sings*. That makes the phrase "*I sing to*" correct, rather than "*I sings to*." The rest fits well: "*falls asleep*" agrees with the singular subject "*my baby sister*," and "*always ... whenever*" correctly links a habitual action to a time clause. The action described—singing to her favorite song—takes the prepositional phrase "*to her favorite song*" correctly. So the error is the part containing "*I sings to*." The corrected sentence is: *My baby sister always falls asleep whenever I sing to her favorite song.*

9. Which gas makes up about 21% of Earth's atmosphere?

- A. Nitrogen
- B. Oxygen**
- C. Argon
- D. Carbon Dioxide

Air is made up mostly of two gases by volume: nitrogen and oxygen. Nitrogen accounts for about 78% of the atmosphere, while oxygen makes up about 21%. The remaining tiny amounts come from other gases such as argon, carbon dioxide, neon, helium, and others. So the gas that sits around 21% of Earth's atmosphere is oxygen. The rest of the air is largely nitrogen, which is why nitrogen dominates the composition overall.

10. In a velocity versus time graph, how can a horizontal graph be interpreted?

- A. maximum displacement
- B. constant velocity**
- C. increasing speed
- D. changing acceleration

A velocity-time graph shows how velocity changes as time passes. A horizontal line means velocity does not change over time—its value is the same at every moment. Since the slope of the line is zero, the acceleration is zero. That means the object moves with constant velocity: its speed stays the same and its direction stays the same. If the line sits at a positive velocity, the object covers equal distances in equal time intervals, so displacement grows linearly with time ($\text{distance} = \text{velocity} \times \text{time}$). If the line is on the time axis, the velocity is zero and the object is at rest. This interpretation aligns with the idea of constant velocity, rather than increasing speed (which would show a rising line), or changing acceleration (which would require a non-horizontal slope).

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Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://dostjlss.examzify.com>

We wish you the very best on your exam journey. You've got this!

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